U.S. Department of Transportation
Federal Highway Administration

Federal Highway Administration
RESOURCE CENTER

User Friendly Version of CAL3QHC: Highway Air Quality Models Get a Facelift

Problem: The technology currently being used for modeling air quality is outdated and difficult to use.
Until a few years ago, many computer programs ran on the Disk Operating System (DOS), which required users to enter data through a series of command prompts. Today, most programs function through more user-friendly systems that enable users to spend less time entering commands and more time simply pointing and clicking. Programs that model air quality, however, have not kept pace, and DOS continues to make the task of simulating airflow and pollution near highways a challenging one.

Solution: Provide the new CAL3QHC models to air quality professionals.
To make the jobs of transportation professionals easier, the Air Quality technical service Team of the Federal Highway Administration's (FHWA) Resource Center (RC) is designing a new, easy-to-use interface for two air quality models – the U.S. Environmental Protection Agency (EPA) California Line Source Dispersion Model (CALINE3) for freeways and the CAL3QHC model for signalized intersections. With the new interface, the models will run on the Microsoft Windows® operating system and will include interactive graphical forms for entering data.

To operate the new interface, the user starts by entering input control data, such as the title of the job, and selects which of the two models to run. Next, the user chooses one of the three data input options that FHWA will include in the new interface for the purpose of extending the functionality of CALINE3 and CAL3QHC. Depending on the available data and the goal of the project, the user has three choices: they can enter all of the required data, use EPA-recommended default data, or have the interface enter all the data except for the location-specific mobile source emission factor (worst-case pre-screen option). To facilitate a worst-case pre-screen analysis, the user can choose the most representative freeway or intersection configuration from a list of predefined layouts.

The user then enters any additional information (such as the location and configuration of the site to be analyzed and meteorological data) into three other input screens. Finally, the user clicks on the "Run" and "Results" icons to execute the model and see the results, which are displayed on a summary table that the user can print or save.

At the bottom of each input screen, instructions will appear in order to assist new users. The screens also contain a status "dashboard" to remind the user of the options they selected and the data entered.

Although the new interface is still under development, FHWA will soon conduct a second round of reviews. Once complete, FHWA will distribute the interface to air quality modeling practitioners and researchers at State Departments of Transportation (DOT's) and metropolitan planning organizations.

For more information, contact:
Michael Claggett
Phone: (303) 716-2284
E-mail: michael.claggett@fhwa.dot.gov

FHWA Publication No: FHWA-RC-BAL-04-0015